Appl. No. 09/643,316
Response dated 3/1/2004
Reply to Office Action of 10/29/2003

REMARKS/ARGUMENTS

Objections to Drawings

The Examiner has objected to Fig. 3 because reference characters "320-322" have been

used to designate records in both the manufacturers and categories tables.

Fig. 3 has been amended to provide newly numbered elements 350, 351 and 352 where

duplicative elements 320, 321 and 322 existed on table 302. The specification has been amended

on Page 14, ll. 6-19 to describe the 320-322 and 350-352 reference characters.

In addition, Fig. 10 has been amended since it previously showed the indices of the two

tables switched between the two tables, so the index name "Manufacturer ID" index label has

been removed from the first table and is now used to label the index for the second table and also

the "Category ID" index label has been moved from the second table to the first table.

Embodiment of the Invention

The Examiner characterizes the claimed invention as "a method of using bit vector

indexes in order to increase the efficiency of database querying". Examiner's characterization of

the claimed invention is directed to a narrow implementation of an embodiment of the invention.

Applicant respectfully states the Examiner's characterization is but one facet of the disclosed

invention and does not correspond precisely to the metes and bounds of the currently claimed

invention.

- 10 -

Appl. No. 09/643,316
Response dated 3/1/2004
Reply to Office Action of 10/29/2003

Objections to the Claims

All previous claims have been canceled rendering previous objections moot.

Claim remarks with regards to 35 U.S.C. §112

Although claims 1-63 are now canceled thus rendering previous rejections moot, the

Examiner had previously rejected some of these claims under 35 U.S.C §112 and the new claims

have been crafted to eliminate these rejections. To expedite prosecution of this Application on its

merits Applicant responds to the Examiner's pertinent question regarding logical "AND"

operations.

Paragraph 18 of the Office Action states:

> ...performing a logical "AND" will result in a single result representing whether
> any of the at least one data records contains a combination of the at least first and second
> values. However, the result of such a logical "AND" operation will represent whether
> any of the records contain the first value and any of the records contain the second value;
> the values need not occur in the same record for a logical "AND" to return a "1".
> For example, if record 1 contains value1, and record 2 contains value2, a bitwise
> "AND" operation (01 & 10) will correctly result in a 00, indicating that there are no
> records that contain both value1 and value2. However, a *logical* "AND" operation (01
> && 10) will result in a 1, indicating that both values were non-zero...

A logical "AND" operation as described in this application on Page 27, first paragraph

and shown in Fig. 9A results in a TRUE for bit vector 951, a TRUE for bit vector 952 and a

FALSE for bit vector 953. These are shown as "1"s for TRUE and "0"s for FALSE in the

second row of the top table 1000 of Fig. 10. Page 25, paragraph 2 states, "the comparison can

stop as soon as one pair of corresponding bits are found to both be set".

- 11 -

Appl. No. 09/643,316
Response dated 3/1/2004
Reply to Office Action of 10/29/2003

Claim remarks with regards to 35 U.S.C. §103

Although claims 1-63 are now canceled, the Examiner previously rejected these claims under 35 U.S.C §103 as being unpatentable over O'Neil et al., in view of Chadha, et al. (amongst other references to be discussed). The new claims are believed to be novel over all of the references previously presented and are believed to be unobvious over any combination thereof. To expedite prosecution of this Application on its merits Applicant describes herein how the newly submitted claims differ from the previous references and combinations for at least the following reasons:

O'Neil et al., does not anticipate new independent claim 64 because O'Neil et al., does not teach "accessing said first Boolean value from a bit vector index stored as an array comprising said first bit vector wherein said array comprises a first index accessed via said first value and a second index accessed by said first bit position". Initial access to bit vector indices in O'Neil et al., is via b-tree (page 39 right column paragraph 2), "A bitmap index for a column C with values v1, v2, ..., vk, is a B-tree with entries having these keyvalues and associated data portions that contain Bitmaps...". In other words, there is a B-tree to successively access in a repetitive fashion to initially even reach the desired bitmap before utilizing it.

O'Neil et al., does not anticipate new claims 72-78 since there is no contemplation of "storing a first result intermediate bit vector obtained from said performing a bit-level "AND" step". O'Neil et al., appears to operate on bitmaps that exactly correspond to values in records without storing intermediate bit map results for later use during iterative or interactive queries.

- 12 -

Appl. No. 09/643,316
Response dated 3/1/2004
Reply to Office Action of 10/29/2003

Applicant agrees with Examiner in that <u>O'Neil et al.</u>, does not explicitly teach a method

wherein the bit vector representations are associated with a combination of field values by

utilizing at least two look-up tables. New claims 79 and 80 are therefore novel and unobvious

over all references previously cited.

<u>Chadha et al.</u>, discloses an <u>encoded vectorized index</u> which is an index that encodes the

values in the column with CEILING(LOG(N)) bits (K bits wide). This is very different than the

invention disclosed in the present application which comprises an "associating a first bit vector

with a first value to be held in a first field" step. The Examiner's statement on the last paragraph

of section 26 of the Office Action clearly shows that <u>Chadha et al.</u>, works in a fundamentally

different way i.e., "allows a single index to be maintained for each attribute..." (that is K bits

wide). The bit operations of <u>O'Neil et al.</u>, clearly would not work on the encoded vectorized

index of <u>Chadha et al.</u>

<u>Depledge et al.</u>, does not contemplate "storing said first result Boolean value and said

second result Boolean value as a value limit correlation wherein said value limit correlation

comprises a first index having a first dimension sized to said first count and a second index

having a second dimension sized to said second count irregardless of a total data record count."

<u>Depledge et al.</u>, is concerned with synchronizing the individual bit maps at the bit positions with

corresponding record changes and does not contemplate logical "AND" operations.

<u>Schildt</u> does not teach the specific form of logical "AND" operation used in the present

application and previously discussed in the 112 section above.

- 13 -

Appl. No. 09/643,316
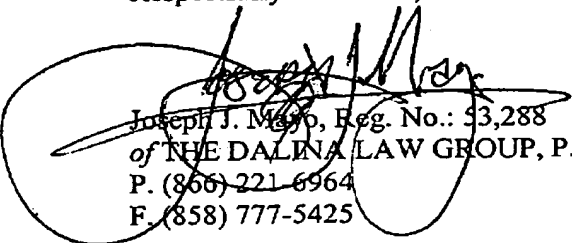Response dated 3/1/2004
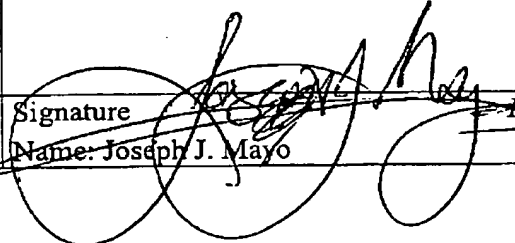Reply to Office Action of 10/29/2003

Specification

The specification has been amended to use the correct reference characters as shown in amended Fig. 3, table 302, depicting records 350-352 as Categories table records.

CONCLUSION

For at least the reasons stated herein, Applicant respectfully submits that the new claims are in condition for allowance. If the Examiner differs in this conclusion, the Examiner is hereby requested to contact Applicant's representative for purposes of a telephone interview at the number listed below before any action (other than an allowance) is initiated.

Respectfully submitted,

Joseph J. Mayo, Reg. No.: 43,288
of THE DALINA LAW GROUP, P.C.
P. (866) 221-6964
F. (858) 777-5425

Correspondence Info:	*CERTIFICATE OF TRANSMISSION*
Customer Number **36067**	*I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office on March 1, 2004 to (703) 872-9306.*
	Signature _____ Date: March 1, 2004 Name: Joseph J. Mayo

- 14 -